Porosity variability in chalk and the scale of variations

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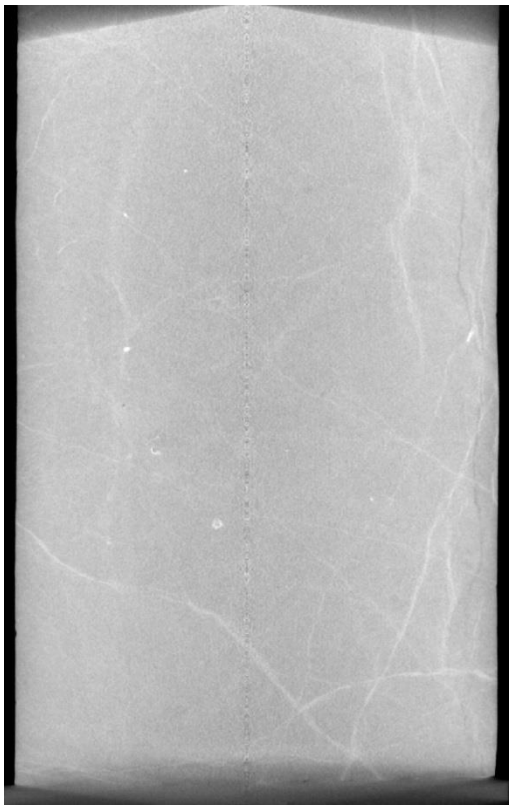
The project has applied novel techniques to image and analyse porosity variations of sub-mm to dm scale in chalk material of decimetre dimensions. The advanced high energy CT-scanning applied for high-resolution imaging of chalk rock requires development of a scanning and reconstruction procedure to account for artefacts, calibration, and treatment of positioning requirements. The first scanning attempts with the advanced equipment reveal important internal heterogeneity features such as very thin fractures, healed-hairline fracture sets, trace-fossils and mineralisations, some of which cannot be detected on the core surface. The application on high-porosity outcrop chalk allows absolute quantification of porosity by exploiting difference-images (saturated and unsaturated) in order to display the porosity variations at very high resolution.



Core 12 cm diameter showing healed hairline fracture network